

### **Abstract**

This invention provides methods for discovering a connectivity relationship among external connections to a two dimensional logic cell, such as a nanocell. The connectivity relationships may then be used to derive a logical relationship among the external connections. Knowledge of the logical relationship among the external connections is, in turn, used to program the logic cell. In one embodiment, voltage pulses of alternating polarity and progressively shorter duration are used to program a chain of interconnected devices within a logic cell. Characterization of connectivity, programming, re-programming and dynamic testing of logic cells, including nanocells, and cell assemblies are taught in the inventive method.